user's manual

NVC-401C

NVDN-401C

400 SERIES

NOVUS

http://www.e-camere.ro/camere-supraveghere/Novus/NVDN-401C

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INFORMATION

EMC (2004/108/EC) and LVD (2006/95/EC) Directives

CE Marking

Our products are manufactured to comply with the requirements of the following directives and national regulations implementing the directives:

- Electromagnetic compatibility EMC 2004/108/EC.
- Low voltage LVD 2006/95/EC with further amendment. The Directive applies to electrical equipment designed for use with a voltage rating of between 50VAC and as well as 75VDC and 1500VDC.

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WEEE Directive 2002/96/EC

Information on Disposal for Users of Waste Electrical and Electronic Equipment

This appliance is marked according to the European 1000VAC Directive on Waste Electrical and Electronic Equipment (2002/96/EC) and further amendments. By ensuring this product is disposed of correctly, you will help to prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product.
The symbol on the product, or the documents accompanying the product, indicates that this appliance may not be treated as household waste. It shall be handed over to the applicable collection point for used up electrical and electronic equipment for recycling purpose. For more information about recycling of this product, please contact your local authorities, your household waste disposal service or the shop where you purchased the product.

RoHS Directive 2002/95/EC

Out of concern for human health protection and friendly environment, we assure that our products falling under RoHS Directive regulations, regarding the restriction of the use of hazardous substances in electrical and electronic equipment, have been designed and manufactured in compliance with the above mentioned regulations. Simultaneously, we claim that our products have been tested and do not contain hazardous substances whose exceeding limits could have negative impact on human health or natural environment.

Information

The device, as a part of professional CCTV system used for surveillance and control, is not designed for self installation in households by individuals without technical knowledge.

The manufacturer is not responsible for defects and damages that result from improper or inconsistent with user's manual installation of the device in the system.

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SAFETY REQUIREMENTS

WARNING!

THE KNOWLEDGE OF THIS MANUAL IS AN INDESPENSIBLE CONDITION OF A PROPER DEVICE OPERATION. YOU ARE KINDLY REQUSTED TO FAMILIRIZE YOURSELF WITH THE MANUAL PRIOR TO INSTALLATION AND FURTHER DEVICE OPERATION.

WARNING!

USER IS NOT ALLOWED TO DISASSEMBLE THE CASING AS THERE ARE NO USER-SERVICEABLE PARTS INSIDE THIS UNIT. ONLY AUTHORIZED SERVICE PERSONNEL MAY OPEN THE UNIT

INSTALLATION AND SERVICING SHOULD ONLY BE DONE BY QUALIFIED SERVICE PERSONNEL AND SHOULD CONFORM TO ALL LOCAL REGULATIONS

WARNING!

PRIOR TO UNDERTAKING ANY ACTION THAT IS NOT DESCRIBED FOR THE GIVEN PRODUCT IN USER'S MANUAL AND OTHER DOCUMENTS DELIVERED WITH THE PRODUCT, OR IF IT DOES NOT ARISE FROM THE USUAL APPLICATION OF THE PRODUCT, MANUFACTURER MUST BE CONTACTED UNDER THE RIGOR OF EXCLUDING THE MANUFACTURER'S RESPONSIBILITY FOR THE RESULTS OF SUCH AN ACTION.

IMPORTANT SAFEGUARDS AND WARNINGS

1. Prior to undertaking any action please consult the following manual and read all the safety and operating instructions before starting the device.
2. Please keep this manual for the lifespan of the device in case referring to the contents of this manual is necessary;
3. All the safety precautions referred to in this manual should be strictly followed, as they have a direct influence on user's safety and durability and reliability of the device;
4. All actions conducted by the servicemen and users must be accomplished in accordance with the user's manual;
5. The device should be disconnected from power sources during maintenance procedures;
6. Usage of additional devices and components neither provided nor recommended by the producer is forbidden;
7. Mounting the device in places where proper ventilation cannot be provided (e. g. closed lockers etc.) is not recommended since it may lead to heat build-up and damaging the device itself as a consequence;
8. Mounting the camera on unstable surface or using not recommended mounts is forbidden. Improperly mounted camera may cause a fatal accident or may be seriously damaged itself. The camera must be mounted by qualified personnel with proper authorization, in accordance with this user's manual;

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SAFETY REQUIREMENTS

9. Device should be supplied only from a power sources whose parameters are in accordance with those specified by the producer in the camera technical datasheet. Therefore, it is forbidden to supply the camera from a power sources with unknown parameters, unstable or not meeting producer's requirements;
10. Signal cables (conducting TV or / and telemetric signal) should be placed in a way excluding the possibility of damaging them by accident. Special attention must be paid to cables getting from the camera and connecting the power supply;
11. To avoid equipment damage, whole TV circuit should be equipped with properly made discharge-, overload- and lightning protection devices. Usage of separating transformers is advised;
12. Electric installation supplying the device should be designed to meet the specifications given by the producer in such a way that overloading is impossible;
13. User cannot repair or upgrade the equipment himself. All maintenance actions and repairs should be conducted only by qualified service personnel;
14. Unplug the camera from the power source immediately and contact the proper maintenance department when the following occurs:

- Damages to the power cord or to the plug itself;
- Liquids getting inside the device or exposure to strong mechanical shock;
- Device behaves in a way not described in the manual and all adjustments approved by the manufacturer and possible to apply by user himself, seem not to have any effect;
- Camera is damaged;
- Atypical behaviour of the camera components may be seen (heard).

16. In necessity of repairs attention to using only original replacement parts (with their parameters in accordance with those specified by the producer) should be paid. Non-licensed service and non-genuine replacement parts may cause fire or electrocution;
17. After maintenance activities, tests should be run to ensure proper operation of all the functional components of the device.

Attention!
Technical changes reserved without prior notice and printing errors possible.

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FOREWORD INFORMATION

1. PACKAGE CONTENTS

- Video camera with plug in the lens mounting place
- Mount adapter for C type lens mount
- L wrench
- 4 pin Mini-DIN connector (for video or DC-type auto-iris lens)
- Power connector
- User's manual

If any of the listed equipment has been damaged during transport or if the package is incomplete, the contents of package should be packed back in to the original box. Please contact your local NOVUS distributor for further assistance.

2. MAIN CHARACTERISTICS

- Electronic day/night function (NVC-401C)
  Mechanical IR cut filter (NVDN-401C)
- Horizontal resolution: 650 TVL (NVC-401C)
  Horizontal resolution: up to 700 TVL (NVDN-401C)
- Min. illumination: 0.05 lx/F=1.2 (NVC-401C)
  Min. illumination: from 0.005 lx/F=1.2 (NVDN-401C)
- Wide Dynamic Range (WDR) for enhanced image quality in diverse light conditions
- Digital Noise Reduction (DNR)
- High Light Compensation (HLC)
- Privacy zones: 4
- Other functions: various picture effects, motion detection
- Full configuration (user friendly multi-lingual OSD) directly from the camera
- Enclosure color: White
- Power supply: 12 VDC

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FEATURES AND SPECIFICATION

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3. SPECIFICATION

Model	NVC-401C	NVDN-401C
Pick-up element	CCD imager, 1/3" SONY Super HAD II	
Number of Effective Pixels	976 (H) × 582 (V)	
Horizontal resolution	650 TVL – color mode, 650 TVL – B/W mode	650 TVL – color mode, 700 TVL – B/W mode
Min. illumination	0.05 lx/F=1.2 – color mode (1/50 s), 0.05 lx/F=1.2 – B/W mode (1/50 s)	0.05 lx/F=1.2 – color mode (1/50 s), 0.005 lx/F=1.2 – B/W mode (1/50 s)
S/N Ratio	≥52 dB	
Electronic Shutter	Auto: 1/50 s ~ 1/100 000 s	
Mount	C/CS	
Iris Mode	D	
Type	Electronic D/N function	Mechanical IR cut filter
Switching Mode	Auto / Manual	
Switching Level Adjustment	Yes	
Switching Delay	0 ~ 255 s	
OSD	English, Russian and others	
Back Light Compensation (BLC)	Yes	
High Light Compensation (HLC)	Yes	
Wide Dynamic Range (WDR)	Yes	
Digital Noise Reduction (DNR)	Yes	
Privacy Zones	4	
Motion Detection	Yes	
Image Processing	Mirror effect, sharpening	
Video Output	BNC, 1.0 Vp-p, 75 Ohm	
Dimensions (mm)	58(W) x 62 (H) x 128 (L)	
Weight	370 g	
Enclosure	Aluminium, white	
Power Supply	12 VDC	
Power Consumption	0.9 W	
Operating Temperature	-30°C ~ 45°C	

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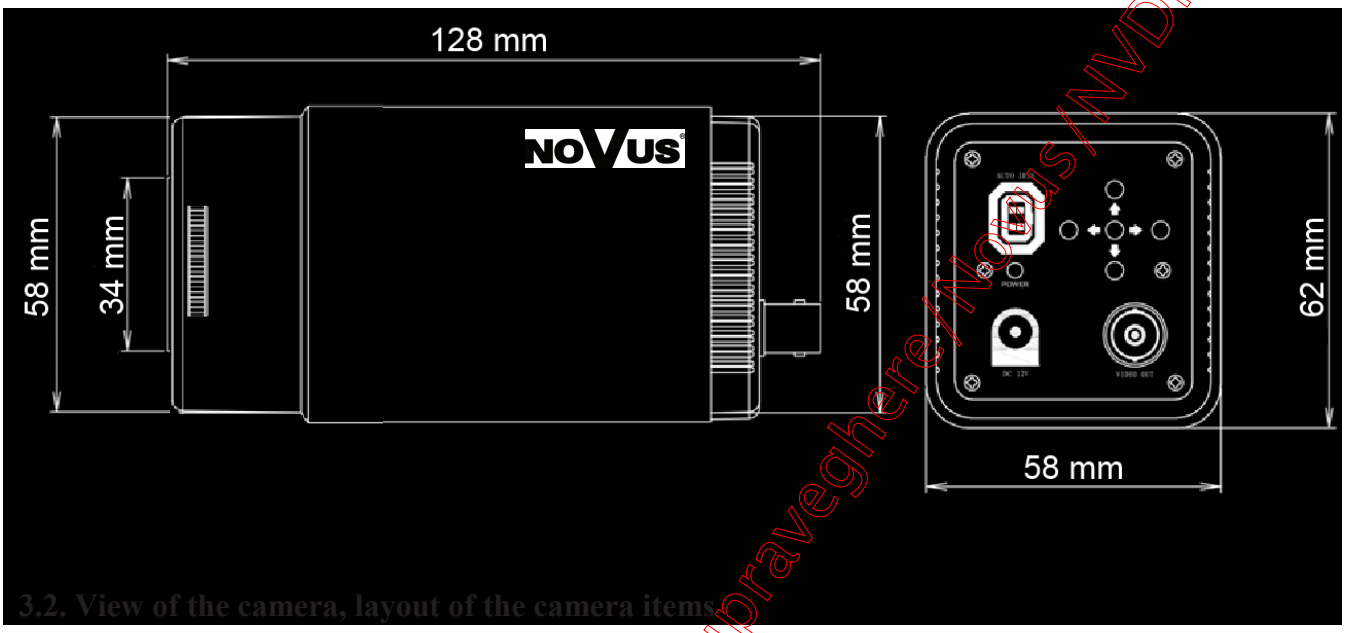
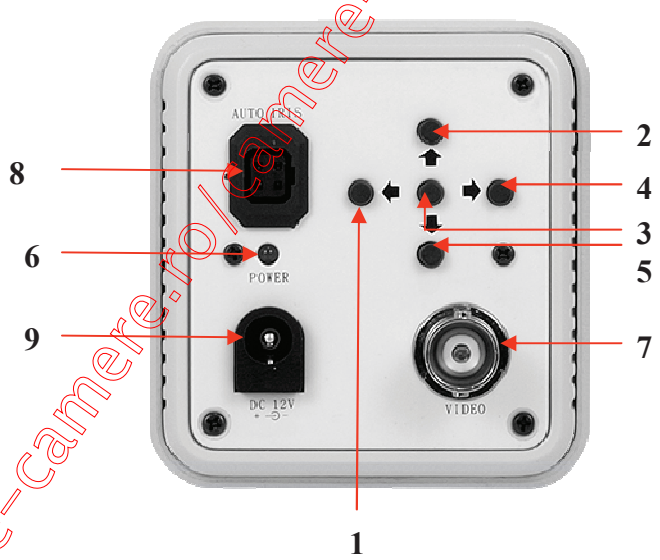
FEATURES AND SPECIFICATION

3.1 Dimensions



3.2. View of the camera, layout of the camera items

Rear view



1,2,4,5 - direction buttons LEFT, UP, RIGHT, DOWN
3 - SET button
6 - POWER supply diode
7 - BNC connector
8 - Auto Iris Lens Connector
9 - Power supply connector 12V DC

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INSTALLATION

4. INSTALLATION

4.1 Lens installation

The NVC-401C and NVDN-401C cameras support manual and auto iris D type lenses. It is recommended to use IR series lenses for day/night camera and for cooperation with IR illuminators. In case of operation with IR illuminators it is necessary to use IR series lenses.

Thanks to ring, application usage of C-mount lenses is possible .

Note: In case of using CS-mount lenses additional ring is not needed.

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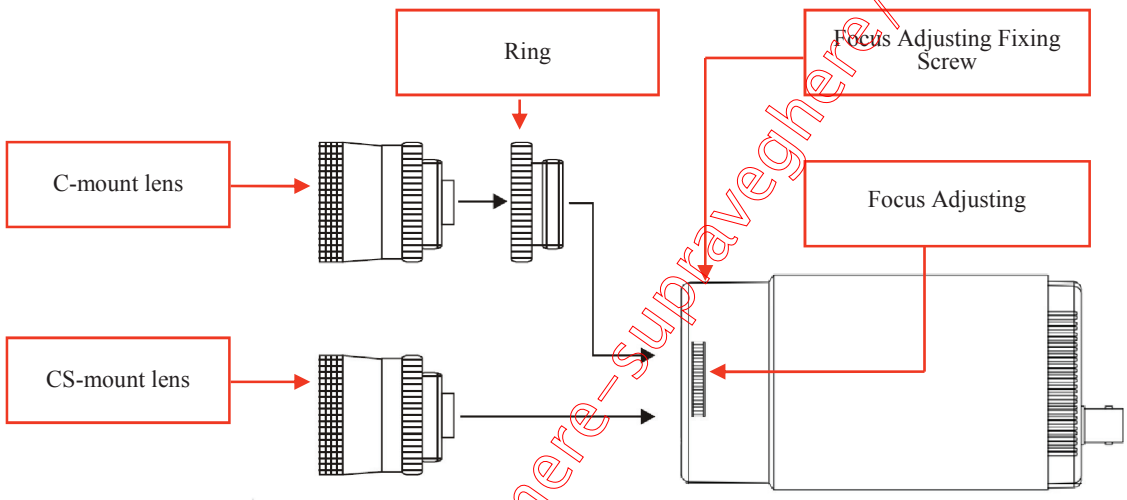
Side view



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4.1.1 Fixed iris lens installation

In order to install manual iris lens one should:

- Carefully remove the plug protecting the CCD pick-up element
- Carefully screw the lens to the end of the thread till slight resistance can be felt
- Supply power to the camera, adjust focal length and focus. In the ***MAIN SETUP*** menu set lens control as ***MANUAL*** and set appropriate mode of electronic shutter

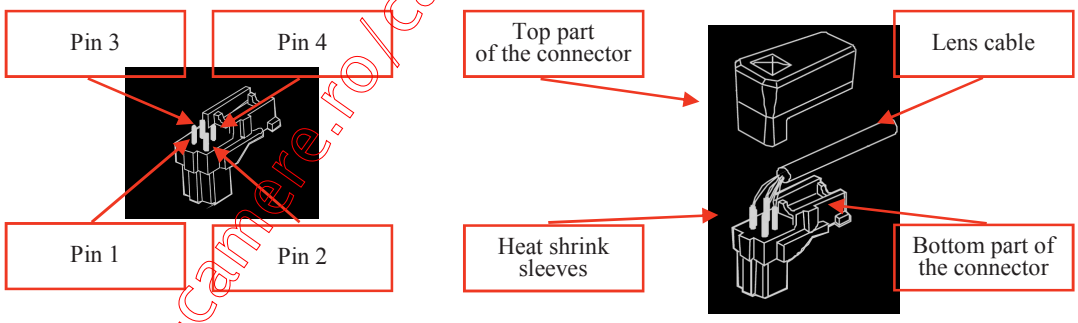
Note: For best results, perform focus adjustments at night (with iris fully opened) or while using a #6 or #8 welder's glass in front of the lens to avoid overexposure.

4.1.2 Auto iris lens installation (type D)

In order to install auto iris lens one should:

- Carefully remove the plug protected the CCD pick-up element
- Carefully screw the lens till slight resistance can be felt
- Plug the connector into the auto iris jack of the camera
- Set the DC/VIDEO driver switch on the DC position

Note: If lens cable does not end with a connector use the connector supplied with the camera. According to the lens manual and advices below, one should solder the cables to the connector and protect them against short circuit by the heat shrink sleeves.



Pin	Function
1	Dumping coil -
2	Dumping coil +
3	Drive coil +
4	Drive coil -

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INSTALLATION

- In the camera menu set lens control as ***DC***
- Supply power to the camera, adjust focal length and focus

Note: For best results, perform focus adjustments at night (with iris fully opened) or while using a #6 or #8 welder's glass in front of the lens to avoid overexposure.

Note: The cameras are equipped with the circuit for iris control with the voltage level adjustment in the menu. Default settings are selected for the optimum quality of video signal. It is not recommended to make any changes if it is not necessary. In case of changes it is recommended to use #6 or #8 welder's glass in front of the lens and see the signal on the oscilloscope. During adjustment AGC feature should be switched off.

4.1.3 Manual iris lens installation

In order to install manual iris lens one should:

- Carefully remove the plug protecting the CCD pick-up element
- Carefully screw the lens till slight resistance can be felt
- Supply power to the camera, adjust focal length and focus. In the ***MAIN SETUP*** menu set lens control as ***MANUAL*** and appropriate mode of electronic shutter.

Note: For best results, perform focus adjustments at night (iris is full open) or while using a #6 or #8 welder's glass in front of the lens to avoid overexposure.

Note: The level of iris opening should be adjusted with camera pointed to a scene with highest possible illumination (at its installation place). Please focus on obtaining a picture with highest illumination, but without overexposing the picture.

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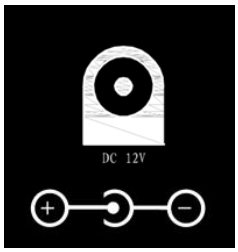
INSTALLATION

4.2 Power supply connection

Warning: Device should be supplied only from a power sources whose parameters are in accordance with those specified by the producer in the camera technical datasheet. Therefore, it is forbidden to supply the camera from power sources with their parameters unknown, unstable or not meeting the producer's requirements.

- NVC-401C and NVDN-401C are 12VDC ± 10% supplied. Please make sure proper polarity is maintained.



Power supply connector 12V DC

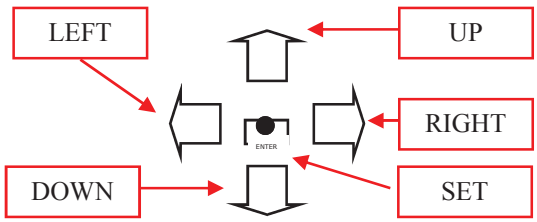
- It is possible to use additional power connector, but please make sure proper polarity is maintained (in accordance with power connector signs).

Power connector

5. SETTINGS

NVC-401C and NVDN-401C cameras feature the OSD menu. During camera standard operation status information may be displayed on the screen.

As it has been mentioned before, 5 buttons on the rear panel are dedicated to navigation and making changes:



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In order to enter the menu press the joystick down, which results in executing ENTER command. For choosing the submenus please move the joystick into *UP, DOWN* positions. If a ↵ symbol is present, enter particular sub-menu by pressing the joystick, which is associated with executing the ENTER. command. To change the parameters use the *LEFT* and *RIGHT* joystick positions. In order to leave the menu select *EXIT* and press ENTER. To exit submenu please select ***RETURN*** position, and press ENTER. Selecting (via left/right joystick movement) END in the ***ENTER*** position closes the menu and leaves to main camera view.

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5.1. Main menu

In order to enter the menu press the *SET* button. The following main menu is displayed on the screen:

Menu - First page

```
SETUP MENU

▸LANGUAGE      ENGLISH
 LENS          AUTO↵
 SHUTTER/AGC   AUTO↵
 WHITE BAL     ATW↵
 PICT ADJUST   ↵
 NR            ↵
 DAY/NIGHT     AUTO↵


 NEXT↵
 EXIT↵         SAVE ALL
```

Menu - Second page

```
SETUP MENU

▸BACKLIGHT     OFF
 ATR           ON↵
 PRIVACY       ON↵
 MOTION DET    ON↵
 CAMERA ID     OFF
 SYNC          INT
 CAMERA RESET


 BACK↵
 EXIT↵         SAVE ALL
```

Choosing ***NEXT/BACK*** option result displaying other page of the menu.

All changes take effect immediately. However, to save settings permanently choose ***SAVE ALL*** and press SET button. Otherwise changes that have been made are temporary and will be cancelled once the camera restarts.

Attention: To restore factory default, choose *CAMERA RESET* option, on the second page of the menu and press SET button.

5.1.1. LANGUAGE submenu

This menu is used to select the language of the OSD menus. Select to set the language between chinese, english, japanese, german, french, russian, portuguese, spanish.

5.1.2. LENS submenu

This submenu allows for setting the lens parameters. Because of used lens, settings in this submenu don't affect on displaying screen. Please let it in default option - ***MANUAL***.

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SETTINGS

5.1.3. SHUTTER/AGC submenu

This menu offers how to control/select SHUTTER and AGC to get the best image for the high luminance and the low luminance according to the scene.

In ***AUTO*** mode:

HIGH LUMINANCE Settings on the medium - and high-brightness side.

MODE ***(SHUT)*** Specifies AE control - Shutter. This camera don't have AUTO IRIS mechanism, therefore that setting don't affect on displaying screen.

BRIGHTNESS ***(0-255)*** Sets brightness level.

LOW LUMINANCE Settings on the low-brightness side.

MODE ***(OFF/AGC)*** Allows to switch Auto Gain Control to compensate the video level when the scene is dim.

BRIGHTNESS Sets the brightness level which starts AGC from ***(x0.25/0.5/0.75/1.0)*** of full video level. If set to x0.50, the camera will start AGC when the video level goes down below the 50% level.

In ***MANUAL*** mode:

MODE ***(SHUT+AGC)*** Defines available parameters for Manual Exposure mode,

SHUTTER ***(1/10000s - 1/50s)*** Sets the manual shutter. Manual shutter is only useful when luminance is unchanged.

AGC ***(6.00-44.80)*** Sets AGC gain in dB. Higher gain make a scene brighter, but noise increases.

5.1.4. *WHITE BAL* submenu

This submenu allows to choose appropriate settings depending on various colour temperature conditions. White balance can be set to 7 modes listed below.

ATW (Auto Tracking White balance) is continuously monitoring/analyzing the colour temperature of the incoming light and correcting the white balance. ATW limits the colour temperature range at about 2,500˚K~8,500˚K to reduce the excessive compensation for the big object which has a single colour.

SPEED Sets the AWB compensating speed. Lower value makes AWB faster. Too fast an AWB may force colour oscillation.

DELAY CNT Adjusts the period between updates of AWB. The smaller value will update AWB more frequently (faster).

ATW FRAME Determines the ATW range with respect to the fundamental range. A higher value than x1.00 extends the ATW range at lower and higher colour temperature.

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ENVIRONMENT Selects ***INDOOR*** or ***OUTDOOR***. Their ATW is optimized for the limited application.

INDOOR Optimized for indoor installation and compensates ATW for low colour temperature such as incandescent lights.

OUTDOOR Optimized for outdoor sunlit applications and compensates ATW for high colour temperature such as daylight.

PUSH Allows the camera automatically adjust the white balance under all conditions. Has no limits between about 1,800˚K~10,500˚K but it may over-compensate the white balance for the big object which has a single colour. In cases where it goes under 2,500˚K such as halogen light, ATW may stop. If so, PUSH mode is recommended.

USER1 Fluorescent light fixed gain (3200K) white balance. May be adjusted by R-GAIN and B -GAIN and useful only for the steady light.

USER2 Outdoor fixed gain (6300K) fixed white balance, May be adjusted by R-GAIN and B-GAIN and useful only for the steady light.

ANTI CR (Anti Colour Rolling) can reduce colour rolling under the fluorescent light when the camera operates in shutter control without an auto iris lens.

MANUAL Allows to set B and R gain value manually.

PUSH LOCK Used to find the optimal setting for the current luminance environment. Point the camera towards a sheet of white paper and press the *SET* button. Whenever the condition changes, readjust it.

If the camera is working in an area where energy saving lamps are the only source of light the scene might be *reddish* in ATW mode. In these cases ***PUSH*** mode is recommended.

5.1.5. PICT ADJUST submenu

Submenu allows to set parameters of displaying scene.

MIRROR ***(ON/OFF)*** Picture will be flipped horizontally if it is turned ON.

BRIGHTNESS ***(0-255)*** Increases or decreases the brightness of the picture.

CONTRAST ***(0-255)*** Increases or decreases the contrast of the picture.

SHARPNESS ***(0-255)*** Increases or decreases the sharpness of the picture.

HUE ***(0-255)*** Increases or decreases the hue of the picture.

GAIN ***(0-255)*** Increases or decreases the color gain of the picture.

5.1.6. *NR* (Noise Reduction) submenu

This submenu allows for changing digital noise reduction settings. After selecting ***ON*** press the *SET* please, to display submenu allowing for adjustment of the digital noise reduction level, as depicted below.

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SETTINGS

NR MODE Select to set the 2D NR filter mode ***(Y, C, Y/C).***

Y LEVEL ***(0-15)*** Indicates the noise reduction strength for the luminance signal. Higher value performs stronger noise reduction and makes the image less sharp. Due to the limitation of 2D NR, noise reduction may not be effective enough.

C LEVEL ***(0-15)*** Indicates the noise reduction strength for the chrominance signal. Higher value performs stronger noise reduction and makes the image less sharp. Due to the limitation of 2D NR, noise reduction may not be effective enough.

5.1.7. *DAY/NIGHT submenu*

Menu allows to set operating mode of the electronic D/N function. There are 5 modes which can be chosen.

COLOR The Day/Night function is set to OFF.

B/W The NIGHT mode is established forcibly, and chroma is set to OFF. When B/W<┘ is selected, click ENTER to bring up the B/W sub-menu for further settings.

BURST (ON/OFF) Sets whether to output the burst signal when the Night status has been identified.

IR OPTIMIZER (ON/OFF) Automatically balances the infrared light required in a scene

MODE (AUTO/CENTER) Features to center of image or automatic area.

LEVEL (0-31) Defines level of the optimization

AUTO Day or Night is automatically identified and controlled accordingly. After pressing *SET* button in this mode submenu depicted below appears.

BURST (ON/OFF) Sets whether to output the burst signal when the Night status has been identified.

DELAY CNT (0-255) Is the time in seconds before Day↔Night switches. DELAY can avoid the unwanted/frivolous switching of short term lights such as light from a passing car.

DAY→NIGHT (0-255) Select to set the threshold for identifying the Night status from the Day status. Lower (Higher) value makes the camera switched from Day to Night at lower (higher) illumination. If the camera stays in Color at night time, increase DAY→NIGHT threshold value until it just switches to Night.

NIGHT→DAY (0-255) Select to set the threshold for identifying the Day status from the Night status. Lower (Higher) value makes the camera switched from Night to Day at lower (higher) illumination. If the camera stays in B/W mode during day time, decrease NIGHT→DAY threshold value until it switches to Day.

EXT1 In this mode way of D&N change is controlled by external synchronization (photovaristor). EXT1 mean D&N will exchange at high level voltage,

EXT2 In this mode way of D&N change is controlled by external synchronization (photovaristor). EXT2 mean D&N will exchange at low level voltage,

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5.1.8. *BACKLIGHT* submenu

These compensation functions allow for enhancing visibility of the objects located in the foreground, surrounded by strongly illuminated background (***BLC***) or for enhancing visibility of the objects located near the strong light source (***HLC***). If a strong, point light source appears on the screen, function will mask it allowing for effective observation of the scene itself (for example this function is used to, observe licence-plates of the cars).

5.1.9. ATR (Adaptive Tone Reproduction) submenu (WDR)

The ATR feature improves the dynamic range and the visibility of the image by providing the optimal gradation compensation of the image in one field. This is achieved by two steps image processing: luminance compression and contrast enhancement, so that the tone can be enhanced at highlighted and dark areas.

LUMINANCE (***LOW, MID, HIGH***) Compresses the highlighted area and enhances the dark area so that the entire image can converge toward the medium level. ***LOW*** will compensate minimally and ***HIGH*** will average out the image. With setting ***HIGH***, the image may look less contrastive and noise may increase in the dark area.

CONTRAST (***LOW, MIDLOW, MID, MIDHIGH, HIGH***). Adjusts the strength of the image contrast. If set to too high, the dark area may lose detail and the high luminance area may saturate.

5.1.10. PRIVACY submenu

This menu allows for enabling four privacy zones. If this option is turned on, desired part of the screen is masked using rectangular zones. Pressing *SET* displays submenu which allows for adjusting privacy settings.

AREA SEL ***(1,2,3,4/4)*** Sets the mask frame to be adjusted.

TOP/BOTTOM/LEFT/RIGHT Sets the mask frame selected by the AREA SEL parameter (differs for NTSC and PAL).

COLOR **(1-8)** Sets the colors of the masking frames.: ***red, green, blue, yellow, cyan, magneta, white, black;***

TRANSP. Transparency rate for the mask can be adjusted. 0.00 - Mask is fully transparent and not visible. 0.50 - Mask is 50% transparent. 0.75 - Mask is 25% transparent. 1.00 - Mask is not transparent.

MOSAIC ***(ON/OFF)*** Enables or disables the mosaic effect for the selected mask window at AREA SEL

5.1.11. MOTION DET (Motion Detection) submenu

This menu allows for turning a built-in motion detection feature on or off. Motion detection may simultaneously be conducted in four independent zones (with their size and location selected by user). Detection results *blinking* frame of the area on the screen. When ON is selected, click SET to bring up the MOTION DET sub-menu for further settings.

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DETECT SENSE (0-127) Adjusts the sensitivity for detecting motion. A higher value is more sensitive.

BLOCK DISP ***(ON/ENABLE/OFF)*** Enables or disables displaying luminance highlighted blocks for the area where the motion is detected.

MONITOR AREA (ON/OFF) Displays four windows as programmed in sizes and positions. If the motion is detected window is blinking;

AREA SEL (1,2,3,4/4) defines the monitoring frame to be set.

TOP/BOTTOM/LEFT/RIGHT sets the monitoring frame of selected area.

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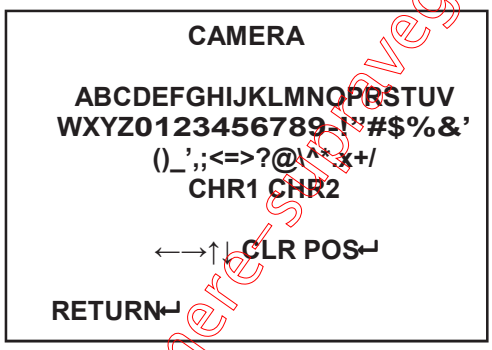
5.1.12. *CAMERA ID submenu*

This menu is used to set camera ID which can be displayed on the screen. When the ON<┘ is selected, click SET to bring up the CAMERA ID sub-menu for further settings.

Title may consist of up to 52 characters (2 rows with 26 char.) Please select desired characters from the virtual keyboard, which becomes available after pressing *SET*.



←, →, ↑, ↓ Moving the cursor in the direction of the arrow.

CLR Select to clear one letter of the input.

***POS* 8** Adjust the position of the camera ID.

RETURN Exit from edit mode.

5.1.13. *CAMERA RESET option*

Click to restore all the settings to the default values.

http://www.e-camere.ro/camere-supraveghere/Novus/NVDN-401C

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